

ANALYSIS

# Analyzing the Kyoto Protocol under the Marrakesh Accords: economic efficiency and environmental effectiveness

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## Abstract

This article evaluates the environmental effectiveness and economic implications of the Kyoto Protocol (KP) after the Bonn agreement and the Marrakesh Accords. We will break it down into several components that correspond with major steps in the international process: pre-COP 6 version of the KP, with unrestricted international emissions trading but without sinks; withdrawal of the USA; and decisions on sinks in Bonn and Marrakesh. The Marrakesh Accords bring Annex-I emissions in 2010 without the USA at 0.5% under base-year levels; this corresponds to nearly 2% above the 1990-levels. The US withdrawal has by far the greatest impact in reducing the environmental effectiveness of the KP, whereas the impact of the decision on sinks is comparatively small. The US withdrawal also substantially reduces the permit demand and permit prices will drop dramatically. Hot air becomes increasingly dominant and may threaten the viability of the Kyoto Mechanisms (KM), especially in lower baseline (business-as-usual (BaU)) scenarios. Therefore, banking of hot air is of absolute importance to improve the environmental effectiveness of the protocol at moderately higher costs, while enhancing the development of a viable emission trading market. A strategy of curtailing and banking permit supply is also in the interest of the dominant seller, Russia.

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## 1. Introduction

On December 11, 1997, the parties at the third session of the Conference of the Parties (COP-3) to the United Nations Framework Convention on Climate Change (UNFCCC) in Kyoto agreed to the Kyoto Protocol (KP) (UNFCCC, 1998). Four

years later, on the 23rd of July 2001, another landmark in international climate change policy was reached. Delegates of the resumed session of COP-6 in Bonn approved a political agreement on a number of key implementation issues of the KP.

The Bonn agreement underwent a difficult birth (UNFCCC, 2001a). Parties had failed to close a deal earlier at the first session of COP-6 in The Hague. During the preparations for the follow-up, the new US administration declared the KP to be fatally flawed and announced that the USA would not agree to any outcome of the resumed session of

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COP-6. Yet, after fierce negotiations, all parties in Bonn, except the USA, agreed to the compromise drafted by the Chairman of COP-6, Jan Pronk, who is also the Dutch Minister of the Environment. Some praised the fact that several key parties had shown surprising flexibility in their positions to close the deal. Others, however, were critical of the generous offers that had stripped the KP of its environmental meaning.

About 3 months after Bonn, November 2001, the international deliberations at COP-7 in Marrakesh succeeded in translating all the provisions of the Bonn agreement into legal texts (UNFCCC, 2001b). These Marrakesh Accords mark the end of a 4-year negotiating period and formally pave the way for entry into force of the KP.

Here, we will evaluate the environmental effectiveness and economic implications of the KP under the Marrakesh Accords. In Section 2, the main elements of the Bonn agreement and Marrakesh Accords relevant for our analysis will be briefly evaluated, while Section 3 will present the analysis. Next, our evaluation will be put into perspective in Section 4, which contains our calculation of the impact by key determining factors on the outcomes. Section 5 presents the conclusions.

## 2. Main elements of the Marrakesh Accords

The following major elements are included in the Marrakesh Accords: the Kyoto Mechanisms (KMs), i.e. international emission trading (IET), joint implementation (JI) and the clean development mechanism (CDM); land use; land-use change and forestry (LULUCF); compliance; monitoring and reporting; and financing for developing countries. This section briefly describes the main elements of the accords for the KMs and land use, as well as the UNFCCC participation issue. All are relevant for our analysis.

### 2.1. Kyoto Mechanisms

The KMs have been introduced as flexibility instruments for international climate change policies. An important element in the Bonn agree-

ment and the final Marrakesh Accords involves the absence of a quantitative cap on emissions trading—the so-called complementarity issue. Up to the Bonn meeting, the international negotiations had concentrated on setting a quantitative cap on the use of the KMs by Annex-I countries. The EU, in particular, has been a strong advocate of imposing concrete ceilings on permit trading in order to encourage domestic actions, proposing that at least half of the reduction effort would have to be carried out domestically. The Marrakesh Accords include only a qualitative approach by stating that ‘domestic action shall thus constitute a significant element of the effort’ by each Annex-I Party.

Another decision relevant to IET relates to the commitment period reserve (CPR). This reserve aims to prevent a country from overselling, which may result non-compliance. Countries are obliged to maintain a CPR, which should not drop below 90% of that country’s emission budget (assigned amounts) or 100% of five times the most recently reviewed inventory, whichever is lowest. The former condition of 90% of the emission budget is probably effective for net buyers (most industrialized countries). For net sellers and countries with large amounts of hot air<sup>1</sup>, like Russia and the Ukraine, the latter condition, with its most recently reviewed inventory, applies. This condition suggests that a country cannot trade more than the fall in emissions below its emission budget around the time of the first commitment period<sup>2</sup>.

As regards JI, countries have agreed to ‘refrain from using emission reduction units generated from nuclear facilities’. A similar condition also applies to the CDM. Furthermore, small-scale activities focused on renewable energy and efficiency are given preferential treatment under the CDM through the development of simplified

<sup>1</sup> Since the economic downturn in the early 1990s, the emissions from Annex-I countries of the FSU, i.e. Russia, Ukraine, Latvia, Lithuania and Estonia, have declined substantially and are expected to come out well below their Kyoto targets in 2010. This is called hot air.

<sup>2</sup> The credits from JI (ERUs) are excluded from this CPR. ERUs constitute certified emission reductions already realised and are deducted from a seller country’s assigned amounts.

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